AMENDMENTS TO THE ABSTRACT

Please replace the existing abstract with the following abstract:

In a first aspect, a first method is provided for hierarchical scheduling. The first method includes the steps of (1) selecting a first winning entry from one of a plurality of main calendars during a time unit, the first winning entry indicating a first pipe to be serviced during the time unit (2) determining that no pipe flow corresponding to the winning first pipe currently needs to be serviced during the time unit (3) selecting a second winning entry from the plurality of main calendars during the time unit, the second winning entry indicating a second pipe or an autonomous flow to be serviced during the time unit; and (4) servicing the autonomous flow or a pipe flow corresponding to the second winning entry during the time unit. Numerous other aspects are provided.